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David F. Ludwig
BBL Sciences, Annaplois, MD

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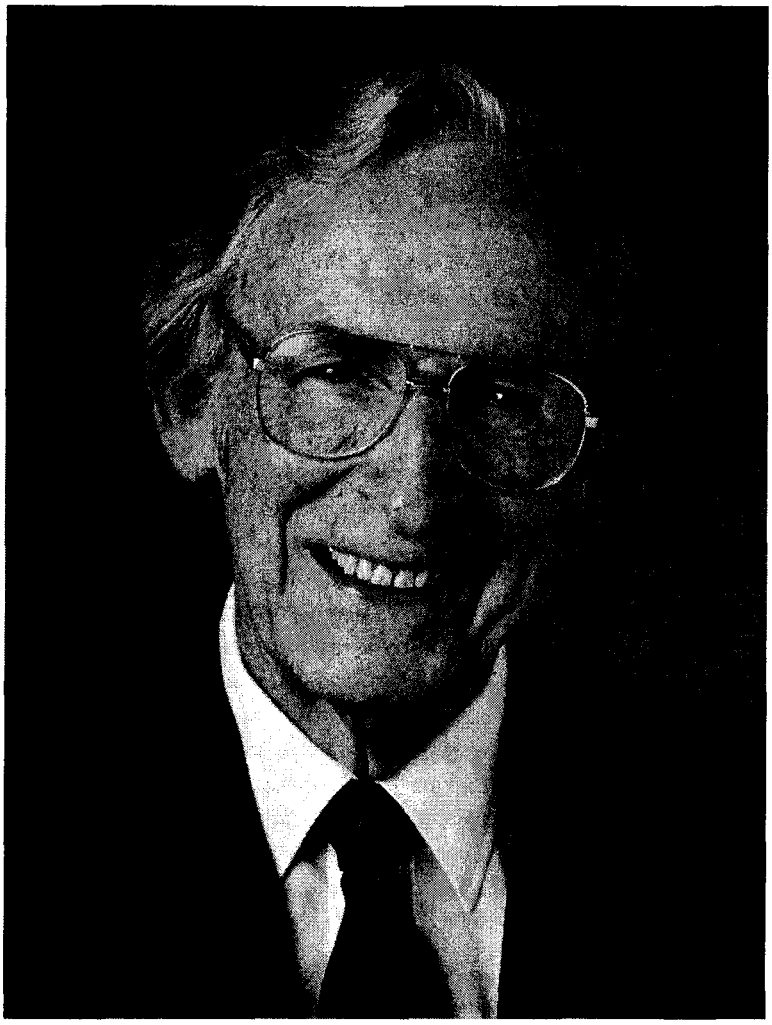
David F. Ludwig
BBL Sciences, 326 First Street Suite 200, Annapolis MD 21403. dfl@bbl-inc.com



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Ludwig

In the middle decades of the 20th century, there was a rush of innovation in biology and chemistry. Scientists from many disciplines thought hard about the meaning of the parts in the context of the whole—and vice versa. One outcoine of that thinking was modern ecological science, and the generation of genius that got us this far is starting to slip away. Among those we lost last year was Eugene P. Odum, who died on August 10 at his home in Athens, Georgia.

Gene Odum was a passionate educator and communicator, and he crafted ecological concepts like an artist creating a series of sculptures. Among the concepts he pioneered was a particularly important kind of nonlinear relationship: subsidy-stress theory. The idea was simple—certain interactions, stressful and degrading at high levels, could be helpful and constructive at lower levels. The concept was rooted in common sense. After all, everyone knows a farm field needs water, but not too much, and people need vitamins that are otherwise toxic at high doses. Gene's innovation was to generalize to broader ecological interactions. To see that gradients were created in time and space by nonlinear reactions to "stressors".

Soon after I claimed my desk in the Institute of Ecology at the University of Georgia in the summer of 1982, I got a practical lesson in ecological nonlinearity. As I accompanied Dr. Odum[1] on a walk across campus to the library one afternoon, I noticed that he stayed on the turf of the lawn while I trod in the well-worn red clay path. I asked him why. He stopped, and knelt to run his hand over the culms. "Grasses like a certain level of stress. Many species are more productive if they are grazed or trampled. But not too much. Constant walking on a single line wears away the rhizomes, leaves you with that dirt path. However, if we spread our footsteps over the whole lawn, it would actually be better for it." Gene could always teach a complex topic by simple example.

Gene's career was packed with accomplishments. He wrote the first widely used ecology text, a standard for decades in updates and revisions. He was a founder of the University of Georgia's Marine Institute on Sapelo Island and of the Institute of Ecology on campus in Athens. He was named to the National Academy of Sciences. He wrote a stream of books and articles intended to link non-scientists to their ecological foundations. His longest-lasting contribution, however, may well be the generation of students—the scientists of today—that he helped to train.

We lost other giants this last year. H. T. Odum, Gene's brother, lifelong collaborator, and a pioneer of quantitative systems analysis in ecology and economics died in September. R. G. Wiegert, another long-tiine faculty member at the University of Georgia, passed away in November. Dick Wiegert had a rare talent for linking theory and experiment, and the good sense to conduct his experiments in the wilds of Yellowstone, on the marshes of Sapelo, and along the Spanish coast.

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[1] Nearly everyone was on a first-name basis at the Institute, but for students and all but the most senior faculty, it was invariably "Dr. Odum", a mark of deep respect that carried through in-person meetings and secondhand conversations (as in "Dr. Odum wrote...").

Remembering E.P. Odum

The scientific process of education, publication and discourse assures that we have the work of our elders to rely on, even if they are no longer here to guide us in person. We can only hope that our contributions advance things as much for upcoming generations. And we need to remember that what's important is not just the science itself, but the way of teaching—like using a mowed campus lawn as an object lesson in ecological nonlinearity.